

WHAT IS CLAIMED IS:

- 1 1. A nonwoven fabric comprising at least two separate but interconnected
2 layers, each of the layers being provided with discrete interconnections so as to provide
3 discrete voids between the two layers of fabric.
- 1 2. The nonwoven fabric according to claim 1 characterised in that the
2 voids comprise a channel within the structure of the fabric.
- 1 3. The nonwoven fabric according to claim 1 characterised in that the
2 voids comprise a plurality of channels.
- 1 4. The nonwoven fabric according to claim 2 characterised in that the
2 channels have a substantially cylindrical or tubular shape.
- 1 5. The nonwoven fabric according to claim 1 characterised in that the
2 voids are arranged in a substantially uniform or periodic manner.
- 1 6. The nonwoven fabric according to claim 1 characterised in that the
2 thickness of the nonwoven fabric is from 1 mm to 9 mm.
- 1 7. The nonwoven fabric according to claim 1 characterised in that the area
2 density of the nonwoven fabric is from 40 to 300 g/m².
- 1 8. The nonwoven fabric according to claim 1 wherein the voids comprise
2 discrete channels within the body of the fabric.
- 1 9. The nonwoven fabric according to claim 1 characterised in that the
2 fabric weight is in the range 20-1000 g/m².
- 1 10. The nonwoven fabric according to claim 2 characterised in that the
2 width of the channels are in the range from 0.2 mm to 8.5 mm.
- 1 11. The nonwoven fabric according to claim 1 wherein said voids further
2 comprise functional materials.

1 **12.** The nonwoven fabric according to claim **11** characterised in that the
2 functional material is a member selected from a yarn, filament, wire, wax, gel, liquid, pulp
3 and particle.

1 **13.** The nonwoven fabric according to claim **1** in which the separate but
2 interconnected layers are formed from a member selected from carded, air-laid, wet-laid,
3 spun-laid and meltblown webs and combinations thereof.

1 **14.** The nonwoven fabric according to claim **1** wherein the layers are
2 fibrous, and wherein at least two fibrous layers are made of different fibre types.

1 **15.** The nonwoven fabric according to claim **14** in which at least one
2 fibrous layer is hydrophobic and at least one fibrous layer is hydrophilic.

1 **16.** The nonwoven fabric according to claim **12** wherein the functional
2 material is a member selected from a yarn and a filament and said yarns and filaments are
3 made of a member selected from natural, man-made and mineral fibres.

1 **17.** The nonwoven fabric according to claim **12** wherein the functional
2 material is a liquid and said liquid is a member selected from cleaning liquids, detergent
3 liquids, paints, perfumes, cosmetics, lotions, ointments, liquid nutrients and creams.

1 **18.** The nonwoven fabric according to claim **12** wherein the functional
2 material is a powder and said powder is a member selected from superabsorbents, cleaning
3 agents and medicaments.

1 **19.** The nonwoven fabric according to claim **12** wherein the functional
2 material is a particle and said particle is a member selected from a material called Silica gel,
3 activated carbon particles, metallic particles, ceramic particles, polymer particles, phase
4 change material (PCM) particles and seed particles.

1 **20.** The nonwoven fabric according to claim **12** wherein the functional
2 material is a wire and said wire is a member selected from electrically conductive wires,
3 shape memory alloy (SMA) wire and optical wires.

1 **21.** The nonwoven fabric according to claim **12** wherein the functional
2 material is a gel and said gel is a member selected from hydrogels, medicinal gels and
3 hygienic cleaning gels.

1 **22.** A method of manufacturing the nonwoven fabric according to claim **1**
2 which comprises the steps of:

3 (i) forming a nonwoven fabric from fibre or filament webs on either side
4 of a spacer device; and

5 (ii) causing fibres in at least one web to be transferred between the gaps in
6 the spacer device towards the adjacent web (optionally applying the same process to the
7 reverse side of the fabric) to form an integrated structure.

1 **23.** The method according to claim **22** further comprising:

2 (iii) using high pressure water jets in combination with a rigid spacer device
3 to manufacture the fabric.

1 **24.** The method according to claim **22** in which the fibre or filament web is
2 formed by a method, which is a member selected from, carding, carding and lapping, air-laid,
3 melt-blowing and spunlaid methods.

1 **25.** The method according to claim **22** in which two or more fibrous layers
2 are introduced onto the face and back surfaces of the spacer device.

1 **26.** The method according to claim **25** in which the layers are subsequently
2 conveyed along the upper and lower surfaces of the spacer device and are simultaneously
3 impacted by high pressure water jets, which interconnect groups of fibres in the layers
4 between the spacer elements.

1 **27.** The method according to claim **23** in which the fibres are mechanically
2 entangled by the jets to provide structural cohesion in the fabric.

1 **28.** The method according to claim **22** further comprising:

2 (iv) introducing a functional material into the voids.

1 **29.** The method according to claim **28** in which the voids are protected
2 from the water jets during step (iii).

1 **30.** The method according to claim **22** further comprising:

2 (v) removing the formed fabric from the spacer system at the end of the
3 process, to leave a 3D fabric structure.

1 **31.** The method according to claim **22** wherein the method is continuous.

1 **32.** The method according to claim **22** further comprising:

2 (vi) bonding the fabric thermally.

1 **33.** The nonwoven fabric according to claim **1** characterised in that the
2 nonwoven fabric is suitable for the controlled release of one or more medicaments.

1 **34.** The nonwoven fabric according to claim **1** characterised in that the
2 nonwoven fabric is suitable for containing or delivering one or more cleaning fluids.

1 **35.** The nonwoven fabric according to claim **1** characterised in that the
2 nonwoven fabric is in the form of an absorbent article.

1 **36.** The nonwoven fabric according to claim **35** wherein the absorbent
2 article is a member selected from a wipe, a wound dressing, a baby diaper component, an
3 incontinence pad, and a feminine hygiene absorbent pad.

1 **37.** The nonwoven fabric according to claim **1** characterised in that the
2 nonwoven fabric is suitable for light-weight thermal insulation.

1 **38.** The use of a nonwoven fabric according to claim **1** in the manufacture
2 of an article.

1 **39.** The use according to claim **38** wherein the article is a member selected
2 from a medicament delivery device, a cleaning fluids delivery device, an absorbent article, a
3 wipe, a wound dressing, a baby diaper component, an incontinence pad, a feminine hygiene
4 absorbent pad and a thermal insulation material.

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40. A method of delivering a functional material which comprises the use of the nonwoven fabric according to claim 1.